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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,916	12/07/2005	Martin Lienhard	DE030205US1	9591

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EXAMINER	
BECK, ALEXANDER S	

ART UNIT	PAPER NUMBER
2629	

NOTIFICATION DATE	DELIVERY MODE
06/16/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No.	Applicant(s)	
	10/559,916	LIENHARD, MARTIN	
	Examiner	Art Unit	
	ALEXANDER S. BECK	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *20051207*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

PRIORITY

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

INFORMATION DISCLOSURE STATEMENT

2. The information disclosure statement filed Dec. 7, 2005, has been acknowledged and considered by the examiner. An initialed copy of the PTO-1449 is included in this correspondence.

CLAIM REJECTIONS - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 2, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,407,727 to Plangger ("Plangger").

As to claim 1, Plangger discloses a display device comprising a liquid crystal material (e.g., Plangger, 2; Fig. 1) between a first substrate (e.g., Plangger, 3; Fig. 1) provided with row electrodes (e.g., Plangger, 5; Fig. 1) and a second substrate (e.g., Plangger, 4; Fig. 1) provided with column electrodes (e.g., Plangger, 6; Fig. 1), driving

means for driving the column electrodes (e.g., Plangger, 6; Fig. 1) in conformity with an image to be displayed (e.g., Plangger, 12, data register; Fig. 2), and driving means (e.g., Plangger, 14, multiplex circuit; Fig. 2) for driving the row electrodes (e.g., Plangger, 5; Fig. 1), wherein during a row selection time at least one row is selected (e.g., Plangger, col. 1, ll. 11-12) and column voltages are supplied to the column electrodes (e.g., Plangger, col. 1, ll. 12-13), wherein the column voltage waveform (e.g., Plangger, data voltages, col. 1, ll. 23-27) depends on the grey scale (e.g., Plangger, t_W, Fig. 3, col. 3, ll. 6-10) to be displayed by a driven pixel in a certain column and depends on a used selection signal supplied to the selected row (e.g., Plangger, col. 1, ll. 20-23), wherein a column voltage is switchable between at least two different column voltage levels (e.g., Plangger, V_d, 0; Fig. 3a) during the row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) and the column voltage waveform (Plangger, col. 1, ll. 23-27) for a following row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) is mirrored (Plangger, col. 4, l. 8) on a mirror axis (e.g., Plangger, $t_{1'''}$; Fig. 8) depending on the column voltage at the end of the current row selection time and the column voltage at the end of the following row selection time (e.g., Plangger, Fig. 8, col. 4, ll. 7-14).

As to claim 2, Plangger discloses a display device as claimed in claim 1, wherein the mirroring (e.g., Plangger, col. 4, l. 8) is performed if the column voltage at the end of the current row selection time is the same as the column voltage at the end of the following row selection time (e.g., Plangger, Fig. 8, col. 4, ll. 7-14).

As to claim 9, Plangger discloses a circuit arrangement (e.g., Plangger, Fig. 2) for driving a display device having row electrodes (e.g., Plangger, 15; Fig. 2) and column electrodes (e.g., Plangger, 16; Fig. 2), the circuit arrangement includes driving means for driving the column electrodes in conformity with an image to be displayed on the display (e.g., Plangger, 12, data register; Fig. 2) and driving means for driving the row electrodes

(e.g., Plangger, 14, multiplex circuit; Fig. 2), at least one row electrode is selected during a row selection time (e.g., Plangger, col. 1, ll. 11-12) and column voltages are supplied to the column electrodes (e.g., Plangger, col. 1, ll. 12-13), wherein the column voltage waveform (e.g., data voltages; col. 1, ll. 23-27) depends on the grey scale (e.g., Plangger, t_W, Fig. 3, col. 3, ll. 6-10) to be displayed by a driven pixel in a certain column and depends on a used selection signal supplied to the selected row (e.g., Plangger, col. 1, ll. 20-23), a column voltage is switchable between at least two different column voltage levels (e.g., Plangger, V_d, 0; Fig. 3a) during the row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) and the column voltage waveform (e.g., Plangger, col. 1, ll. 23-27) for a following row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) is mirrored (e.g., Plangger, col. 4, l. 8) on a mirror axis (e.g., Plangger, $t_{1''}$; Fig. 8) depending on the column voltage at the end of the current row selection time and the column voltage at the end of the following row selection time (e.g., Plangger, Fig. 8; col. 4, ll. 7-14).

As to claim 10, Plangger discloses a method for driving a display device having row electrodes (e.g., Plangger, 5; Fig. 1) and column electrodes (e.g., Plangger, 6; Fig. 1) wherein during a row selection time at least one row is selected (e.g., Plangger, col. 1, ll. 11-12) and column voltages are supplied to the column electrodes (e.g., Plangger, col. 1, ll. 12-13), wherein the column voltage waveform (e.g., Plangger, data voltages; col. 1, ll. 23-27) depends on the grey scale (e.g., Plangger, t_W, Fig. 3, col. 3, ll. 6-10) to be displayed by a driven pixel in a certain column and depends on a used selection signal supplied to the selected row (e.g., Plangger, col. 1, ll. 20-23), the column voltage having at least two different column voltage levels (e.g., Plangger, V_d, 0; Fig. 3a) during the row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) and the column voltage waveform (e.g., Plangger, col. 1, ll. 23-27) for a following row selection time (e.g., Plangger, row selection signals, Figs. 3b-3f) is mirrored (e.g., Plangger, col. 4, l. 8) on a

mirror axis (e.g., Plangger, $t_{1^{mm}}$; Fig. 8) depending on the column voltage at the end of the current row selection time and the column voltage at the end of the following row selection time (e.g., Plangger, Fig. 8; col. 4, ll. 7-14).

CLAIM REJECTIONS - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Plangger in view of U.S. Patent No. 6,538,629 to Ito ("Ito").

As to claim 3, note the discussion of Plangger above with respect to claim 1.

Plangger does not disclose expressly groups of p rows that are driven simultaneously and row electrodes supply groups of p rows with mutually orthogonal selection signals for driving pixels, in which pixels are defined by overlapping parts of the row and column electrodes, wherein the column voltage is calculated depending on the grey scales to be displayed by the p concurrently driven pixels in a certain column and depending on the used mutually orthogonal selection signals for the respective group of p rows, as claimed.

Ito discloses a display device (e.g., Ito, 40; Fig. 1) wherein groups of p rows are driven simultaneously (e.g., Ito, multi-line selection driving method; col. 3, l. 3) and the row electrodes supply groups of p rows with mutually orthogonal selection signals for

driving pixels (e.g., Ito, Page (Row) Address Control Circuit; Fig. 2; col. 8, ll. 14-19), in which pixels are defined by overlapping parts of the row and column electrodes (e.g., Ito, implicitly suggested in LC Panel 40; Fig. 1), wherein the column voltage is calculated depending on the grey scales (e.g., Ito, SEG4m+4, wherein n is a positive integer 1 through 4; Fig. 7) to be displayed by the p concurrently driven pixels in a certain column and depending on the used mutually orthogonal selection signals for the respective group of p rows (e.g., Ito, addressing of gray-scale display; Fig. 9a).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger such that it included simultaneous row driving and column voltage grey scales, as discussed above, and as taught by Ito.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to lower power consumption (Ito, col. 2, ll. 47-48).

7. Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plangger in view of European Patent Pub. No. 1341150 by Rodeschini et al. ("Rodeschini").

As to claim 4, note the discussion of Plangger above.

Plangger does not disclose expressly wherein the mirroring is done adaptively depending on the picture to be displayed, as claimed.

Rodeschini discloses the mirroring is done adaptively depending on the picture to be displayed (e.g., Rodeschini, second signals C3(t), C5(t); determine grey level by means of an alternance of corresponding values distinct signal levels for intervals of time comprised in the first preset interval time by means of a first PWM modulation; Abstract).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger by including adaptive mirroring, as discussed above, and as taught by Rodeschini.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to reduce power consumption (Rodeschini, Abstract).

As to claim 5, note the discussion of claim 1 above.

Plangger does not disclose the mirror axis is defined in the middle of a row selection time, as claimed.

Rodeschini discloses wherein the mirror axis is defined in the middle of a row selection time (e.g., Rodeschini, voltage level for timing between various G1 and G2 points; Fig. 5).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger by including adaptive mirroring, as discussed above, and as taught by Rodeschini.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to reduce power consumption (Rodeschini, Abstract).

As to claim 6, note the discussion of claim 1 above.

Plangger does not disclose expressly wherein the mirror axis is defined adaptively, as claimed.

Rodeschini discloses wherein the mirror axis is defined adaptively (e.g., Rodeschini, voltage level for timing varies, adaptively, between various G1 and G2 points; Fig. 5).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger by including adaptive mirroring, as discussed above, and as taught by Rodeschini.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to reduce power consumption (Rodeschini, Abstract).

As to claim 7, note the discussion of claims 1 and 2 above.

Plangger does not disclose expressly wherein the row selection time is subdivided into n.sub.pwm sub slots and the column voltage signal can have p+1 different voltage levels during a row selection time, as claimed.

Rodeschini discloses wherein the row selection time is subdivided into n.sub.pwm sub slots (e.g., Rodeschini, multi-line addressing; ¶ 0004) and the column voltage signal can have p+1 different voltage levels during a row selection time (e.g., Rodeschini, pulse width modulation with grey levels of G1, G2, W(hite) and B(lack); ¶ 0007).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger by including adaptive mirroring, as discussed above, and as taught by Rodeschini.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to reduce power consumption (Rodeschini, Abstract).

As to claim 8, note the discussion of claim 1 above.

Plangger does not disclose expressly wherein the following column voltage level for the subsequent row selection time is calculated during the current row selection time, as claimed.

Rodeschini discloses wherein the following column voltage level for the subsequent row selection time is calculated during the current row selection time (e.g., Rodeschini, second signals C3(t) and C5(t) calculate for subsequent row selection times; Abstract).

At the time the invention was made it would have been obvious to one having ordinary skill in the art to modify the display device of Plangger by including adaptive mirroring, as discussed above, and as taught by Rodeschini.

As one of ordinary skill in the art would appreciate, the suggestion/motivation for doing so would have been to reduce power consumption (Rodeschini, Abstract).

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER S. BECK whose telephone number is (571)272-7765. The examiner can normally be reached on M-F, 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dated: June 11, 2009

/Alexander S. Beck/
Examiner, Art Unit 2629